Listing of Claims

1.   (Currently Amended) A method for locating an object utilizing inverse multilateration, the method comprising:

    receiving signal pulses from a transmitting object at a mobile detection device;

    calculating a slant range between the transmitting object and the mobile detection device;

    calculating a position vector of the transmitting object based at least in part on the slant range, the position vector specifying the position of the transmitting object; and

        calculating the location of the mobile detection device relative to the position of the transmitting object.

2.   (Original) The method of claim 1 wherein the calculation of the position vector of the transmitting object further comprises computing $\vec{v}_1 = \left(A_1^T Q^{-1} A_1\right)^{-1} A_1^T Q^{-1} \cdot b_1$.

3.   (Original) The method of claim 1 wherein the calculation of a slant range further comprises use of time of arrival data.

4.   (Original) The method of claim 3 wherein a known distribution of noise is added to the time of arrival data.

5.   (Original) The method of claim 1 wherein receiving signals pulses from a transmitting object further comprises computing the repetition time between adjacent pulses.

6.   (Original) The method of claim 1 wherein the signal pulses are transmitted from a fixed object and the mobile detection device is airborne.

7.   (Currently Amended) A system for locating an object utilizing inverse multilateration, the system comprising:

    a receiver for receiving signal pulses from a transmitting object at a mobile detection device;

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a calculator for calculating a slant range between the transmitting object and the mobile detection device; and

a position vector calculator for calculating a position vector of the transmitting object based at least in part on the slant range; and

a calculator for calculating the location of the mobile detection device relative to the position of the transmitting object.